

## NPP/ VIIRS Level 2G Surface Reflectance Product Description

The NPP/ VIIRS Level 2G surface reflectance products are composed of all available surface reflectance observations for a given day over a set of tiles with global coverage. The tile numbering scheme and boundaries are the same as they are for MODIS. The first set of observations for each data set and grid cell are stored as a two-dimensional data set. Additional data layers are stored in a compacted format.

The Land PEATE produces four Level 2G surface reflectance products, two containing data from the moderate-resolution bands projected to a 1km grid (NPP\_DSR1KDI\_L2GD and NPP\_DSRF1KD\_L2GD), one containing data from the imagery-resolution bands projected to a 500m grid (NPP\_DSRFHKD\_L2GD), and one containing both the moderate-resolution and imagery-resolution bands along with sun/sensor geometry fields (NPP\_DSRFLD\_L2GD). The NPP\_DSR1KDI\_L2GD 1km Level 2G product is generated using imagery-resolution pointer data, while the NPP\_DSRF1KD\_L2GD 1km Level 2G product is generated using moderate-resolution pointer data, but they both contain moderate-resolution band (M-band) surface reflectances. The NPP\_DSRFLD\_L2GD

Further information concerning the surface reflectance retrieval method and interdependencies among Level 2, Level 2G, and Level 3 NPP surface reflectance products is available in the Level 2 Surface Reflectance product description document. The Level 2 document also identifies the closest equivalences between NPP and MODIS bands and surface reflectance products.

**NOTE:** There are seven bytes of quality flag data for each pixel in the LandPEATE-adjusted/AS3002 data, but only six bytes of quality flags per pixel in the LPEATE/ AS3001 data. A table specifying the land quality flag scheme for all VIIRS land surface reflectance products follows the file specification information.

## NPP\_DSR1KDI\_L2GD PRODUCT FILE SPECIFICATION

### Dimensions:

YDim:NPP\_Grid\_L2g\_2d  
XDim:NPP\_Grid\_L2g\_2d  
Total Additional Observations  
Data Rows

### Variables:

short SurfReflect\_Mod\_b01\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
  long\_name = "Moderate (750m) Surface Reflectance Band 1 - first layer"  
  units = "percent reflectance"  
  valid\_range = 0, 65527  
  Scale = 9.9195749e-05f  
  Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535,  
  MISS\_UINT16\_FILL = 65534,  
  ONBOARD\_PT\_UINT16\_FILL = 65533,  
  ONGROUND\_PT\_UINT16\_FILL = 65532,  
  ERR\_UINT16\_FILL = 65531,  
  ELLIPSOID\_UINT16\_FILL = 65530,  
  VDNE\_UINT16\_FILL = 65529,  
  SOUB\_UINT16\_FILL = 65528"

short SurfReflect\_Mod\_b02\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
  long\_name = "Moderate (750m) Surface Reflectance Band 2 - first layer"  
  units = "percent reflectance"  
  valid\_range = 0, 65527  
  Scale = 9.9195749e-05f  
  Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535,  
  MISS\_UINT16\_FILL = 65534,  
  ONBOARD\_PT\_UINT16\_FILL = 65533,  
  ONGROUND\_PT\_UINT16\_FILL = 65532,  
  ERR\_UINT16\_FILL = 65531,  
  ELLIPSOID\_UINT16\_FILL = 65530,  
  VDNE\_UINT16\_FILL = 65529,  
  SOUB\_UINT16\_FILL = 65528"

```
short SurfReflect_Mod_b03_1(YDim:NPP_Grid_L2g_2d, XDim:NPP_Grid_L2g_2d) ;  
    long_name = "Moderate (750m) Surface Reflectance Band 3 - first layer"  
    units = "percent reflectance"  
    valid_range = 0, 65527  
    Scale = 9.9195749e-05f  
    Offset = 0.f
```

FILL VALUES    NA\_UINT16\_FILL = 65535,  
              MISS\_UINT16\_FILL = 65534,  
              ONBOARD\_PT\_UINT16\_FILL = 65533,  
              ONGROUND\_PT\_UINT16\_FILL = 65532,  
              ERR\_UINT16\_FILL = 65531,  
              ELLIPSOID\_UINT16\_FILL = 65530,  
              VDNE\_UINT16\_FILL = 65529,  
              SOUB\_UINT16\_FILL = 65528

```
short SurfReflect_Mod_b04_1(YDim:NPP_Grid_L2g_2d, XDim:NPP_Grid_L2g_2d)  
    long_name = "Moderate (750m) Surface Reflectance Band 4 - first layer"  
    units = "percent reflectance" ;  
    valid_range = 0, 65527  
    Scale = 9.9195749e-05f ;  
    Offset = 0.f
```

FILL VALUES:    NA\_UINT16\_FILL = 65535,  
              MISS\_UINT16\_FILL = 65534,  
              ONBOARD\_PT\_UINT16\_FILL = 65533,  
              ONGROUND\_PT\_UINT16\_FILL = 65532,  
              ERR\_UINT16\_FILL = 65531,  
              ELLIPSOID\_UINT16\_FILL = 65530,  
              VDNE\_UINT16\_FILL = 65529,  
              SOUB\_UINT16\_FILL = 65528

```
short SurfReflect_Mod_b05_1(YDim:NPP_Grid_L2g_2d, XDim:NPP_Grid_L2g_2d)  
    long_name = "Moderate (750m) Surface Reflectance Band 5 - first layer"  
    units = "percent reflectance"  
    valid_range = 0, 65527  
    Scale = 9.9195749e-05f  
    Offset = 0.f
```

FILL VALUES:    NA\_UINT16\_FILL = 65535,  
              MISS\_UINT16\_FILL = 65534,  
              ONBOARD\_PT\_UINT16\_FILL = 65533,  
              ONGROUND\_PT\_UINT16\_FILL = 65532,  
              ERR\_UINT16\_FILL = 65531,  
              ELLIPSOID\_UINT16\_FILL = 65530,

VDNE\_UINT16\_FILL = 65529,  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b07\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Surface Reflectance Band 7 - first layer"  
units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f ;  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535,  
MISS\_UINT16\_FILL = 65534,  
ONBOARD\_PT\_UINT16\_FILL = 65533,  
ONGROUND\_PT\_UINT16\_FILL = 65532,  
ERR\_UINT16\_FILL = 65531,  
ELLIPSOID\_UINT16\_FILL = 65530,  
VDNE\_UINT16\_FILL = 65529,  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b08\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Surface Reflectance Band 8 - first layer"  
units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535,  
MISS\_UINT16\_FILL = 65534,  
ONBOARD\_PT\_UINT16\_FILL = 65533,  
ONGROUND\_PT\_UINT16\_FILL = 65532,  
ERR\_UINT16\_FILL = 65531,  
ELLIPSOID\_UINT16\_FILL = 65530,  
VDNE\_UINT16\_FILL = 65529,  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b10\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Surface Reflectance Band 10 - first layer"  
units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES = NA\_UINT16\_FILL = 65535,  
MISS\_UINT16\_FILL = 65534,  
ONBOARD\_PT\_UINT16\_FILL = 65533,

ONGROUND\_PT\_UINT16\_FILL = 65532,  
ERR\_UINT16\_FILL = 65531,  
ELLIPSOID\_UINT16\_FILL = 65530,  
VDNE\_UINT16\_FILL = 65529,  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b11\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d) ;  
long\_name = "Moderate (750m) Surface Reflectance Band 11 - first layer"  
units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535,  
MISS\_UINT16\_FILL = 65534,  
ONBOARD\_PT\_UINT16\_FILL = 65533,  
ONGROUND\_PT\_UINT16\_FILL = 65532,  
ERR\_UINT16\_FILL = 65531,  
ELLIPSOID\_UINT16\_FILL = 65530,  
VDNE\_UINT16\_FILL = 65529,  
SOUB\_UINT16\_FILL = 65528"

byte Land\_Quality\_Flags\_b01\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Land Quality Flags Byte 1 - first layer"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255,  
MISS\_UINT8\_FILL = 254,  
ONBOARD\_PT\_UINT8\_FILL = 253,  
ONGROUND\_PT\_UINT8\_FILL = 252,  
ERR\_UINT8\_FILL = 251,  
ELLIPSOID\_UINT8\_FILL = 250,  
VDNE\_UINT8\_FILL = 249,  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b02\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Land Quality Flags Byte 2 - first layer"  
units = "bit field"

FILL VALUES NA\_UINT8\_FILL = 255,  
MISS\_UINT8\_FILL = 254,  
ONBOARD\_PT\_UINT8\_FILL = 253,  
ONGROUND\_PT\_UINT8\_FILL = 252,  
ERR\_UINT8\_FILL = 251,  
ELLIPSOID\_UINT8\_FILL = 250,  
VDNE\_UINT8\_FILL = 249,

SOUB\_UINT8\_FILL = 248"

byte Land\_Quality\_Flags\_b03\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d) ;  
long\_name = "Moderate (750m) Land Quality Flags Byte 3 - first layer"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255,  
MISS\_UINT8\_FILL = 254,  
ONBOARD\_PT\_UINT8\_FILL = 253,  
ONGROUND\_PT\_UINT8\_FILL = 252,  
ERR\_UINT8\_FILL = 251,  
ELLIPSOID\_UINT8\_FILL = 250,  
VDNE\_UINT8\_FILL = 249,  
SOUB\_UINT8\_FILL = 248"

byte Land\_Quality\_Flags\_b04\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Land Quality Flags Byte 4 - first layer"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255,  
MISS\_UINT8\_FILL = 254,  
ONBOARD\_PT\_UINT8\_FILL = 253,  
ONGROUND\_PT\_UINT8\_FILL = 252,  
ERR\_UINT8\_FILL = 251,  
ELLIPSOID\_UINT8\_FILL = 250,  
VDNE\_UINT8\_FILL = 249,  
SOUB\_UINT8\_FILL = 248"

byte Land\_Quality\_Flags\_b05\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Land Quality Flags Byte 5 - first layer"  
units = "bit field"

FILL\_VALUES: NA\_UINT8\_FILL = 255,  
MISS\_UINT8\_FILL = 254,  
ONBOARD\_PT\_UINT8\_FILL = 253,  
ONGROUND\_PT\_UINT8\_FILL = 252,  
ERR\_UINT8\_FILL = 251,  
ELLIPSOID\_UINT8\_FILL = 250,  
VDNE\_UINT8\_FILL = 249,  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b06\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Land Quality Flags Byte 6 - first layer"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255,

```
MISS_UINT8_FILL = 254
ONBOARD_PT_UINT8_FILL = 253
ONGROUND_PT_UINT8_FILL = 252
ERR_UINT8_FILL = 251
ELLIPSOID_UINT8_FILL = 250
VDNE_UINT8_FILL = 249
SOUB_UINT8_FILL = 248
```

\*\*\*\*\* NOTE: Land\_Quality\_Flags\_b07 byte is only included in AS3002/ LandPEATE Adjusted data, and is not present in the AS3001/ LPEATE data. \*\*\*\*\*

```
byte Land_Quality_Flags_b07_1(YDim:NPP_Grid_L2g_2d,
Xdim: NPP_Grid_L2g_2d
)
```

```
    long_name = "Moderate (750m) Land Quality Flags Byte 7 - first layer"
    units = "bit field"
```

FILL VALUES:

```
NA_UINT8_FILL = 255,
MISS_UINT8_FILL = 254
ONBOARD_PT_UINT8_FILL = 253
ONGROUND_PT_UINT8_FILL = 252
ERR_UINT8_FILL = 251
ELLIPSOID_UINT8_FILL = 250
VDNE_UINT8_FILL = 249
SOUB_UINT8_FILL = 248
```

```
byte orb_cov_1(YDim:NPP_Grid_L2g_2d, XDim:NPP_Grid_L2g_2d)
    long_name = "Orbit and coverage - first layer"
    units = "bit field"
    valid_range = 0, 255
```

```
byte num_observations(YDim:NPP_Grid_L2g_2d, XDim:NPP_Grid_L2g_2d)
    long_name = "Number of Observations";
    units = "none"
    valid_range = 0, 127
    FillValue = -1
```

```
short SurfReflect_Mod_b01_c(Total Additional Observations)
    long_name = "Moderate (750m) Surface Reflectance Band 1 - additional layer, compact"
    units = "percent reflectance"
    valid_range = 0, 65527
```

Scale = 9.9195749e-05f

Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535,  
MISS\_UINT16\_FILL = 65534,  
ONBOARD\_PT\_UINT16\_FILL = 65533,  
ONGROUND\_PT\_UINT16\_FILL = 65532,  
ERR\_UINT16\_FILL = 65531,  
ELLIPSOID\_UINT16\_FILL = 65530,  
VDNE\_UINT16\_FILL = 65529,  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b02\_c(Total Additional Observations)

long\_name = "Moderate (750m) Surface Reflectance Band 2 - additional layer,  
compact"

units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f ;  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535  
MISS\_UINT16\_FILL = 65534,  
ONBOARD\_PT\_UINT16\_FILL = 65533  
ONGROUND\_PT\_UINT16\_FILL = 65532  
ERR\_UINT16\_FILL = 65531  
ELLIPSOID\_UINT16\_FILL = 65530  
VDNE\_UINT16\_FILL = 65529  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b03\_c(Total Additional Observations) ;

long\_name = "Moderate (750m) Surface Reflectance Band 3 - additional layer,  
compact"

units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535,  
MISS\_UINT16\_FILL = 65534,  
ONBOARD\_PT\_UINT16\_FILL = 65533,  
ONGROUND\_PT\_UINT16\_FILL = 65532,  
ERR\_UINT16\_FILL = 65531,  
ELLIPSOID\_UINT16\_FILL = 65530,  
VDNE\_UINT16\_FILL = 65529,  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b04\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Surface Reflectance Band 4 - additional layer,  
compact"

units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535,  
MISS\_UINT16\_FILL = 65534,  
ONBOARD\_PT\_UINT16\_FILL = 65533,  
ONGROUND\_PT\_UINT16\_FILL = 65532,  
ERR\_UINT16\_FILL = 65531,  
ELLIPSOID\_UINT16\_FILL = 65530,  
VDNE\_UINT16\_FILL = 65529,  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b05\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Surface Reflectance Band 5 - additional layer,  
compact"

units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535,  
MISS\_UINT16\_FILL = 65534,  
ONBOARD\_PT\_UINT16\_FILL = 65533,  
ONGROUND\_PT\_UINT16\_FILL = 65532,  
ERR\_UINT16\_FILL = 65531,  
ELLIPSOID\_UINT16\_FILL = 65530,  
VDNE\_UINT16\_FILL = 65529,  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b07\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Surface Reflectance Band 7 - additional layer,  
compact"

units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535,  
MISS\_UINT16\_FILL = 65534  
ONBOARD\_PT\_UINT16\_FILL = 65533  
ONGROUND\_PT\_UINT16\_FILL = 65532

ERR\_UINT16\_FILL = 65531  
ELLIPSOID\_UINT16\_FILL = 65530  
VDNE\_UINT16\_FILL = 65529  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b08\_c(Total Additional Observations) ;  
long\_name = "Moderate (750m) Surface Reflectance Band 8 - additional layer,  
compact"  
units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535  
MISS\_UINT16\_FILL = 65534  
ONBOARD\_PT\_UINT16\_FILL = 65533  
ONGROUND\_PT\_UINT16\_FILL = 65532  
ERR\_UINT16\_FILL = 65531  
ELLIPSOID\_UINT16\_FILL = 65530  
VDNE\_UINT16\_FILL = 65529  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b10\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Surface Reflectance Band 10 - additional layer,  
compact"  
units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535,  
MISS\_UINT16\_FILL = 65534,  
ONBOARD\_PT\_UINT16\_FILL = 65533,  
ONGROUND\_PT\_UINT16\_FILL = 65532,  
ERR\_UINT16\_FILL = 65531,  
ELLIPSOID\_UINT16\_FILL = 65530,  
VDNE\_UINT16\_FILL = 65529,  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b11\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Surface Reflectance Band 11 - additional layer,  
compact"  
units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535,  
MISS\_UINT16\_FILL = 65534,  
ONBOARD\_PT\_UINT16\_FILL = 65533,  
ONGROUND\_PT\_UINT16\_FILL = 65532,  
ERR\_UINT16\_FILL = 65531,  
ELLIPSOID\_UINT16\_FILL = 65530,  
VDNE\_UINT16\_FILL = 65529,  
SOUB\_UINT16\_FILL = 65528

byte Land\_Quality\_Flags\_b01\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Land Quality Flags Byte 1 - additional layer,  
compact"  
units = "bit field"

FILL\_VALUES = "NA\_UINT8\_FILL = 255,  
MISS\_UINT8\_FILL = 254,  
ONBOARD\_PT\_UINT8\_FILL = 253,  
ONGROUND\_PT\_UINT8\_FILL = 252,  
ERR\_UINT8\_FILL = 251,  
ELLIPSOID\_UINT8\_FILL = 250,  
VDNE\_UINT8\_FILL = 249,  
SOUB\_UINT8\_FILL = 248"

byte Land\_Quality\_Flags\_b02\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Land Quality Flags Byte 2 - additional layer,  
compact"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255,  
MISS\_UINT8\_FILL = 254,  
ONBOARD\_PT\_UINT8\_FILL = 253,  
ONGROUND\_PT\_UINT8\_FILL = 252,  
ERR\_UINT8\_FILL = 251,  
ELLIPSOID\_UINT8\_FILL = 250,  
VDNE\_UINT8\_FILL = 249,  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b03\_c(Total Additional Observations);  
long\_name = "Moderate (750m) Land Quality Flags Byte 3 - additional layer,  
compact"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255,  
MISS\_UINT8\_FILL = 254,  
ONBOARD\_PT\_UINT8\_FILL = 253,

ONGROUND\_PT\_UINT8\_FILL = 252,  
ERR\_UINT8\_FILL = 251,  
ELLIPSOID\_UINT8\_FILL = 250,  
VDNE\_UINT8\_FILL = 249,  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b04\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Land Quality Flags Byte 4 - additional layer,  
compact"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255,  
MISS\_UINT8\_FILL = 254,  
ONBOARD\_PT\_UINT8\_FILL = 253,  
ONGROUND\_PT\_UINT8\_FILL = 252,  
ERR\_UINT8\_FILL = 251,  
ELLIPSOID\_UINT8\_FILL = 250,  
VDNE\_UINT8\_FILL = 249,  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b05\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Land Quality Flags Byte 5 - additional layer,  
compact"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255  
MISS\_UINT8\_FILL = 254  
ONBOARD\_PT\_UINT8\_FILL = 253  
ONGROUND\_PT\_UINT8\_FILL = 252  
ERR\_UINT8\_FILL = 251  
ELLIPSOID\_UINT8\_FILL = 250  
VDNE\_UINT8\_FILL = 249  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b06\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Land Quality Flags Byte 6 - additional layer,  
compact"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255  
MISS\_UINT8\_FILL = 254  
ONBOARD\_PT\_UINT8\_FILL = 253  
ONGROUND\_PT\_UINT8\_FILL = 252  
ERR\_UINT8\_FILL = 251  
ELLIPSOID\_UINT8\_FILL = 250  
VDNE\_UINT8\_FILL = 249

**SOUB\_UINT8\_FILL = 248**

\*\*\*\*\* NOTE: Land\_Quality\_Flags\_b07 byte is only included in AS3002/ LandPEATE Adjusted data, and is not present in the AS3001/ LPEATE data. \*\*\*\*\*

byte Land\_Quality\_Flags\_b07\_c(Total Additional Observations) ;

    long\_name = "Moderate (750m) Land Quality Flags Byte 7 - additional layer, compact"  
    units = "bit field"

FILL VALUES:   NA\_UINT8\_FILL = 255  
                 MISS\_UINT8\_FILL = 254  
                 ONBOARD\_PT\_UINT8\_FILL = 253  
                 ONGROUND\_PT\_UINT8\_FILL = 252  
                 ERR\_UINT8\_FILL = 251  
                 ELLIPSOID\_UINT8\_FILL = 250  
                 VDNE\_UINT8\_FILL = 249  
                 SOUB\_UINT8\_FILL = 248

byte orb\_cov\_c(Total Additional Observations)

    long\_name = "Orbit and coverage - additional layers, compact"  
    units = "bit field"

long nadd\_obs\_row(Data Rows)

    long\_name = "Number of additional observations per row"  
    units = "none"  
    valid\_range = 0, 2147483647  
    FillValue = -1

## **NPP\_DSRF1KD\_L2GD PRODUCT FILE SPECIFICATION**

### **Dimensions:**

YDim:NPP\_Grid\_L2g\_2d  
XDim:NPP\_Grid\_L2g\_2d  
Total Additional Observations  
Data Rows

### **Variables:**

```
short SurfReflect_Mod_b01_1(YDim:NPP_Grid_L2g_2d, XDim:NPP_Grid_L2g_2d)
    long_name = "Moderate (750m) Surface Reflectance Band 1 - first layer"
    units = "percent reflectance"
    valid_range = 0, 65527
    Scale = 9.9195749e-05f
    Offset = 0.f
    FILL VALUES:   NA_UINT16_FILL = 65535
                    MISS_UINT16_FILL = 65534
                    ONBOARD_PT_UINT16_FILL = 65533
                    ONGROUND_PT_UINT16_FILL = 65532
                    ERR_UINT16_FILL = 65531
                    ELLIPSOID_UINT16_FILL = 65530
                    VDNE_UINT16_FILL = 65529
                    SOUB_UINT16_FILL = 65528

short SurfReflect_Mod_b02_1(YDim:NPP_Grid_L2g_2d, XDim:NPP_Grid_L2g_2d)
    long_name = "Moderate (750m) Surface Reflectance Band 2 - first layer"
    units = "percent reflectance"
    valid_range = 0, 65527
    Scale = 9.9195749e-05f
    Offset = 0.f
    FILL VALUES:   NA_UINT16_FILL = 65535
                    MISS_UINT16_FILL = 65534
                    ONBOARD_PT_UINT16_FILL = 65533
                    ONGROUND_PT_UINT16_FILL = 65532
                    ERR_UINT16_FILL = 65531
                    ELLIPSOID_UINT16_FILL = 65530
                    VDNE_UINT16_FILL = 65529
```

SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b03\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Surface Reflectance Band 3 - first layer"  
units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535  
MISS\_UINT16\_FILL = 65534  
ONBOARD\_PT\_UINT16\_FILL = 65533  
ONGROUND\_PT\_UINT16\_FILL = 65532  
ERR\_UINT16\_FILL = 65531  
ELLIPSOID\_UINT16\_FILL = 65530  
VDNE\_UINT16\_FILL = 65529  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b04\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Surface Reflectance Band 4 - first layer"  
units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535  
MISS\_UINT16\_FILL = 65534  
ONBOARD\_PT\_UINT16\_FILL = 65533  
ONGROUND\_PT\_UINT16\_FILL = 65532  
ERR\_UINT16\_FILL = 65531  
ELLIPSOID\_UINT16\_FILL = 65530  
VDNE\_UINT16\_FILL = 65529  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b05\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Surface Reflectance Band 5 - first layer"  
units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535  
MISS\_UINT16\_FILL = 65534  
ONBOARD\_PT\_UINT16\_FILL = 65533  
ONGROUND\_PT\_UINT16\_FILL = 65532  
ERR\_UINT16\_FILL = 65531

```
ELLIPSOID_UINT16_FILL = 65530  
VDNE_UINT16_FILL = 65529  
SOUB_UINT16_FILL = 65528
```

```
short SurfReflect_Mod_b07_1(YDim:NPP_Grid_L2g_2d, XDim:NPP_Grid_L2g_2d)  
    long_name = "Moderate (750m) Surface Reflectance Band 7 - first layer"  
    units = "percent reflectance"  
    valid_range = 0, 65527  
    Scale = 9.9195749e-05f  
    Offset = 0.f
```

FILL VALUES:

```
NA_UINT16_FILL = 65535  
MISS_UINT16_FILL = 65534  
ONBOARD_PT_UINT16_FILL = 65533  
ONGROUND_PT_UINT16_FILL = 65532  
ERR_UINT16_FILL = 65531  
ELLIPSOID_UINT16_FILL = 65530  
VDNE_UINT16_FILL = 65529  
SOUB_UINT16_FILL = 65528
```

```
short SurfReflect_Mod_b08_1(YDim:NPP_Grid_L2g_2d, XDim:NPP_Grid_L2g_2d)  
    long_name = "Moderate (750m) Surface Reflectance Band 8 - first layer"  
    units = "percent reflectance"  
    valid_range = 0, 65527  
    Scale = 9.9195749e-05f  
    Offset = 0.f
```

FILL VALUES:

```
NA_UINT16_FILL = 65535  
MISS_UINT16_FILL = 65534  
ONBOARD_PT_UINT16_FILL = 65533  
ONGROUND_PT_UINT16_FILL = 65532  
ERR_UINT16_FILL = 65531  
ELLIPSOID_UINT16_FILL = 65530  
VDNE_UINT16_FILL = 65529  
SOUB_UINT16_FILL = 65528
```

```
short SurfReflect_Mod_b10_1(YDim:NPP_Grid_L2g_2d, XDim:NPP_Grid_L2g_2d)  
    long_name = "Moderate (750m) Surface Reflectance Band 10 - first layer"  
    units = "percent reflectance"  
    valid_range = 0, 65527  
    Scale = 9.9195749e-05f  
    Offset = 0.f
```

FILL VALUES:

```
NA_UINT16_FILL = 65535  
MISS_UINT16_FILL = 65534  
ONBOARD_PT_UINT16_FILL = 65533
```

ONGROUND\_PT\_UINT16\_FILL = 65532  
ERR\_UINT16\_FILL = 65531  
ELLIPSOID\_UINT16\_FILL = 65530  
VDNE\_UINT16\_FILL = 65529  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b11\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Surface Reflectance Band 11 - first layer"  
units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535  
MISS\_UINT16\_FILL = 65534  
ONBOARD\_PT\_UINT16\_FILL = 65533  
ONGROUND\_PT\_UINT16\_FILL = 65532  
ERR\_UINT16\_FILL = 65531  
ELLIPSOID\_UINT16\_FILL = 65530  
VDNE\_UINT16\_FILL = 65529,  
SOUB\_UINT16\_FILL = 65528

byte Land\_Quality\_Flags\_b01\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Land Quality Flags Byte 1 - first layer"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255  
MISS\_UINT8\_FILL = 254  
ONBOARD\_PT\_UINT8\_FILL = 253  
ONGROUND\_PT\_UINT8\_FILL = 252  
ERR\_UINT8\_FILL = 251  
ELLIPSOID\_UINT8\_FILL = 250  
VDNE\_UINT8\_FILL = 249  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b02\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Land Quality Flags Byte 2 - first layer"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255  
MISS\_UINT8\_FILL = 254  
ONBOARD\_PT\_UINT8\_FILL = 253  
ONGROUND\_PT\_UINT8\_FILL = 252  
ERR\_UINT8\_FILL = 251  
ELLIPSOID\_UINT8\_FILL = 250

VDNE\_UINT8\_FILL = 249  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b03\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Land Quality Flags Byte 3 - first layer"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255  
MISS\_UINT8\_FILL = 254  
ONBOARD\_PT\_UINT8\_FILL = 253  
ONGROUND\_PT\_UINT8\_FILL = 252  
ERR\_UINT8\_FILL = 251  
ELLIPSOID\_UINT8\_FILL = 250  
VDNE\_UINT8\_FILL = 249  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b04\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Land Quality Flags Byte 4 - first layer"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255  
MISS\_UINT8\_FILL = 254  
ONBOARD\_PT\_UINT8\_FILL = 253  
ONGROUND\_PT\_UINT8\_FILL = 252  
ERR\_UINT8\_FILL = 251  
ELLIPSOID\_UINT8\_FILL = 250  
VDNE\_UINT8\_FILL = 249  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b05\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Land Quality Flags Byte 5 - first layer"  
Land\_Quality\_Flags\_b05\_1:units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255  
MISS\_UINT8\_FILL = 254  
ONBOARD\_PT\_UINT8\_FILL = 253  
ONGROUND\_PT\_UINT8\_FILL = 252  
ERR\_UINT8\_FILL = 251  
ELLIPSOID\_UINT8\_FILL = 250  
VDNE\_UINT8\_FILL = 249  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b06\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
long\_name = "Moderate (750m) Land Quality Flags Byte 6 - first layer"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255  
MISS\_UINT8\_FILL = 254  
ONBOARD\_PT\_UINT8\_FILL = 253  
ONGROUND\_PT\_UINT8\_FILL = 252  
ERR\_UINT8\_FILL = 251  
ELLIPSOID\_UINT8\_FILL = 250  
VDNE\_UINT8\_FILL = 249  
SOUB\_UINT8\_FILL = 248

\*\*\*\*\* NOTE: Land\_Quality\_Flags\_b07 byte is only included in AS3002/ LandPEATE Adjusted data, and is not present in the AS3001/ LPEATE data. \*\*\*\*\*

byte Land\_Quality\_Flags\_b07\_1(YDim:NPP\_Grid\_L2g\_2d,  
XDim:NPP\_Grid\_L2g\_2d  
) ;

    long\_name = "Moderate (750m) Land Quality Flags Byte 7 - first layer"  
    units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255  
MISS\_UINT8\_FILL = 254  
ONBOARD\_PT\_UINT8\_FILL = 253  
ONGROUND\_PT\_UINT8\_FILL = 252  
ERR\_UINT8\_FILL = 251  
ELLIPSOID\_UINT8\_FILL = 250  
VDNE\_UINT8\_FILL = 249  
SOUB\_UINT8\_FILL = 248

byte orb\_cov\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
    long\_name = "Orbit and coverage - first layer"  
    units = "bit field"

byte num\_observations(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
    long\_name = "Number of Observations"  
    units = "none"

short SurfReflect\_Mod\_b01\_c(Total Additional Observations)  
    long\_name = "Moderate (750m) Surface Reflectance Band 1 - additional layer,  
compact"  
    units = "percent reflectance"  
    valid\_range = 0, 65527  
    Scale = 9.9195749e-05f

Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535  
MISS\_UINT16\_FILL = 65534  
ONBOARD\_PT\_UINT16\_FILL = 65533  
ONGROUND\_PT\_UINT16\_FILL = 65532  
ERR\_UINT16\_FILL = 65531  
ELLIPSOID\_UINT16\_FILL = 65530  
VDNE\_UINT16\_FILL = 65529  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b02\_c(Total Additional Observations)

long\_name = "Moderate (750m) Surface Reflectance Band 2 - additional layer,  
compact"

units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535  
MISS\_UINT16\_FILL = 65534  
ONBOARD\_PT\_UINT16\_FILL = 65533  
ONGROUND\_PT\_UINT16\_FILL = 65532  
ERR\_UINT16\_FILL = 65531  
ELLIPSOID\_UINT16\_FILL = 65530  
VDNE\_UINT16\_FILL = 65529  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b03\_c(Total Additional Observations)

long\_name = "Moderate (750m) Surface Reflectance Band 3 - additional layer,  
compact"

units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535  
MISS\_UINT16\_FILL = 65534  
ONBOARD\_PT\_UINT16\_FILL = 65533  
ONGROUND\_PT\_UINT16\_FILL = 65532  
ERR\_UINT16\_FILL = 65531  
ELLIPSOID\_UINT16\_FILL = 65530  
VDNE\_UINT16\_FILL = 65529  
SOUB\_UINT16\_FILL = 65528

```
short SurfReflect_Mod_b04_c(Total Additional Observations)
  long_name = "Moderate (750m) Surface Reflectance Band 4 - additional layer,
compact"
    units = "percent reflectance"
    valid_range = 0, 65527
    Scale = 9.9195749e-05f
    Offset = 0.f
  FILL VALUES:  NA_UINT16_FILL = 65535
                MISS_UINT16_FILL = 65534
                ONBOARD_PT_UINT16_FILL = 65533
                ONGROUND_PT_UINT16_FILL = 65532
                ERR_UINT16_FILL = 65531
                ELLIPSOID_UINT16_FILL = 65530
                VDNE_UINT16_FILL = 65529
                SOUB_UINT16_FILL = 65528

short SurfReflect_Mod_b05_c(Total Additional Observations)
  long_name = "Moderate (750m) Surface Reflectance Band 5 - additional layer,
compact"
    units = "percent reflectance"
    valid_range = 0, 65527
    Scale = 9.9195749e-05f
    Offset = 0.f
  FILL VALUES:  NA_UINT16_FILL = 65535
                MISS_UINT16_FILL = 65534
                ONBOARD_PT_UINT16_FILL = 65533
                ONGROUND_PT_UINT16_FILL = 65532
                ERR_UINT16_FILL = 65531
                ELLIPSOID_UINT16_FILL = 65530
                VDNE_UINT16_FILL = 65529
                SOUB_UINT16_FILL = 65528

short SurfReflect_Mod_b07_c(Total Additional Observations)
  long_name = "Moderate (750m) Surface Reflectance Band 7 - additional layer,
compact"
    units = "percent reflectance"
    valid_range = 0, 65527
    Scale = 9.9195749e-05f
    Offset = 0.f
  FILL VALUES:  NA_UINT16_FILL = 65535
                MISS_UINT16_FILL = 65534
                ONBOARD_PT_UINT16_FILL = 65533
                ONGROUND_PT_UINT16_FILL = 65532
```

ERR\_UINT16\_FILL = 65531  
ELLIPSOID\_UINT16\_FILL = 65530  
VDNE\_UINT16\_FILL = 65529  
SOUB\_UINT16\_FILL = 65528"

short SurfReflect\_Mod\_b08\_c(Total Additional Observations) ;  
long\_name = "Moderate (750m) Surface Reflectance Band 8 - additional layer,  
compact"  
units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535  
MISS\_UINT16\_FILL = 65534  
ONBOARD\_PT\_UINT16\_FILL = 65533  
ONGROUND\_PT\_UINT16\_FILL = 65532  
ERR\_UINT16\_FILL = 65531  
ELLIPSOID\_UINT16\_FILL = 65530  
VDNE\_UINT16\_FILL = 65529  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b10\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Surface Reflectance Band 10 - additional layer,  
compact"  
units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535  
MISS\_UINT16\_FILL = 65534  
ONBOARD\_PT\_UINT16\_FILL = 65533  
ONGROUND\_PT\_UINT16\_FILL = 65532  
ERR\_UINT16\_FILL = 65531  
ELLIPSOID\_UINT16\_FILL = 65530  
VDNE\_UINT16\_FILL = 65529  
SOUB\_UINT16\_FILL = 65528

short SurfReflect\_Mod\_b11\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Surface Reflectance Band 11 - additional layer,  
compact"  
units = "percent reflectance"  
valid\_range = 0, 65527  
Scale = 9.9195749e-05f  
Offset = 0.f

FILL VALUES: NA\_UINT16\_FILL = 65535  
MISS\_UINT16\_FILL = 65534  
ONBOARD\_PT\_UINT16\_FILL = 65533  
ONGROUND\_PT\_UINT16\_FILL = 65532  
ERR\_UINT16\_FILL = 65531  
ELLIPSOID\_UINT16\_FILL = 65530  
VDNE\_UINT16\_FILL = 65529  
SOUB\_UINT16\_FILL = 65528

byte Land\_Quality\_Flags\_b01\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Land Quality Flags Byte 1 - additional layer,  
compact"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255  
MISS\_UINT8\_FILL = 254  
ONBOARD\_PT\_UINT8\_FILL = 253  
ONGROUND\_PT\_UINT8\_FILL = 252  
ERR\_UINT8\_FILL = 251  
ELLIPSOID\_UINT8\_FILL = 250  
VDNE\_UINT8\_FILL = 249  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b02\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Land Quality Flags Byte 2 - additional layer,  
compact"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255  
MISS\_UINT8\_FILL = 254  
ONBOARD\_PT\_UINT8\_FILL = 253  
ONGROUND\_PT\_UINT8\_FILL = 252  
ERR\_UINT8\_FILL = 251  
ELLIPSOID\_UINT8\_FILL = 250  
VDNE\_UINT8\_FILL = 249  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b03\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Land Quality Flags Byte 3 - additional layer,  
compact"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255  
MISS\_UINT8\_FILL = 254  
ONBOARD\_PT\_UINT8\_FILL = 253

ONGROUND\_PT\_UINT8\_FILL = 252  
ERR\_UINT8\_FILL = 251  
ELLIPSOID\_UINT8\_FILL = 250  
VDNE\_UINT8\_FILL = 249  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b04\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Land Quality Flags Byte 4 - additional layer,  
compact"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255  
MISS\_UINT8\_FILL = 254  
ONBOARD\_PT\_UINT8\_FILL = 253  
ONGROUND\_PT\_UINT8\_FILL = 252  
ERR\_UINT8\_FILL = 251  
ELLIPSOID\_UINT8\_FILL = 250  
VDNE\_UINT8\_FILL = 249  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b05\_c(Total Additional Observations)  
long\_name = "Moderate (750m) Land Quality Flags Byte 5 - additional layer,  
compact"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255  
MISS\_UINT8\_FILL = 254  
ONBOARD\_PT\_UINT8\_FILL = 253  
ONGROUND\_PT\_UINT8\_FILL = 252  
ERR\_UINT8\_FILL = 251  
ELLIPSOID\_UINT8\_FILL = 250  
VDNE\_UINT8\_FILL = 249  
SOUB\_UINT8\_FILL = 248

byte Land\_Quality\_Flags\_b06\_c(Total Additional Observations);  
long\_name = "Moderate (750m) Land Quality Flags Byte 6 - additional layer,  
compact"  
units = "bit field"

FILL VALUES: NA\_UINT8\_FILL = 255  
MISS\_UINT8\_FILL = 254  
ONBOARD\_PT\_UINT8\_FILL = 253  
ONGROUND\_PT\_UINT8\_FILL = 252  
ERR\_UINT8\_FILL = 251  
ELLIPSOID\_UINT8\_FILL = 250  
VDNE\_UINT8\_FILL = 249

**SOUNB\_UINT8\_FILL = 248**

\*\*\*\*\* NOTE: Land\_Quality\_Flags\_b07 byte is only included in AS3002/ LandPEATE Adjusted data, and is not present in the AS3001/ LPEATE data. \*\*\*\*\*

byte Land\_Quality\_Flags\_b07\_c(Total Additional Observations) ;

    long\_name = "Moderate (750m) Land Quality Flags Byte 7 - additional layer, compact"  
    units = "bit field"

FILL VALUES:   NA\_UINT8\_FILL = 255  
                MISS\_UINT8\_FILL = 254  
                ONBOARD\_PT\_UINT8\_FILL = 253  
                ONGROUND\_PT\_UINT8\_FILL = 252  
                ERR\_UINT8\_FILL = 251  
                ELLIPSOID\_UINT8\_FILL = 250  
                VDNE\_UINT8\_FILL = 249  
                SOUNB\_UINT8\_FILL = 248

byte orb\_cov\_c(Total Additional Observations)

    long\_name = "Orbit and coverage - additional layers, compact"  
    units = "bit field"

long nadd\_obs\_row(Data Rows)

    long\_name = "Number of additional observations per row"  
    units = "none"  
    valid\_range = 0, 2147483647  
    FillValue = -1

## NPP\_DSRFHKD\_L2GD PRODUCT FILE SPECIFICATION

### Dimensions:

YDim:NPP\_Grid\_L2g\_2d  
XDim:NPP\_Grid\_L2g\_2d  
Total Additional Observations  
Data Rows

### Variables:

short I1\_SurfRefl\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
    long\_name = "Imagery (375m) Surface Reflectance Band 1 - first layer"  
    units = "percent reflectance"  
    valid\_range = 0, 65527  
    Scale = 9.9658944e-05f  
    Offset = 0.f

FILL VALUES:    NA\_UINT16\_FILL = 65535  
                 MISS\_UINT16\_FILL = 65534  
                 ONBOARD\_PT\_UINT16\_FILL = 65533  
                 ONGROUND\_PT\_UINT16\_FILL = 65532  
                 ERR\_UINT16\_FILL = 65531  
                 ELLIPSOID\_UINT16\_FILL = 65530  
                 VDNE\_UINT16\_FILL = 65529  
                 SOUB\_UINT16\_FILL = 65528

short I2\_SurfRefl\_1(YDim:NPP\_Grid\_L2g\_2d, XDim:NPP\_Grid\_L2g\_2d)  
    long\_name = "Imagery (375m) Surface Reflectance Band 2 - first layer"  
    units = "percent reflectance"  
    valid\_range = 0, 65527  
    Scale = 9.9658944e-05f  
    Offset = 0.f

FILL VALUES:    NA\_UINT16\_FILL = 65535  
                 MISS\_UINT16\_FILL = 65534  
                 ONBOARD\_PT\_UINT16\_FILL = 65533

```
ONGROUND_PT_UINT16_FILL = 65532
ERR_UINT16_FILL = 65531
ELLIPSOID_UINT16_FILL = 65530
VDNE_UINT16_FILL = 65529
SOUB_UINT16_FILL = 65528
```

```
short I3_SurfRefl_1(YDim:NPP_Grid_L2g_2d, XDim:NPP_Grid_L2g_2d)
    long_name = "Imagery (375m) Surface Reflectance Band 3 - first layer"
    units = "percent reflectance"
    valid_range = 0, 65527
    Scale = 9.9658944e-05f
    Offset = 0.f
```

FILL VALUES:

```
NA_UINT16_FILL = 65535
MISS_UINT16_FILL = 65534
ONBOARD_PT_UINT16_FILL = 65533
ONGROUND_PT_UINT16_FILL = 65532
ERR_UINT16_FILL = 65531
ELLIPSOID_UINT16_FILL = 65530
VDNE_UINT16_FILL = 65529
SOUB_UINT16_FILL = 65528
```

```
byte orb_cov_1(YDim:NPP_Grid_L2g_2d, XDim:NPP_Grid_L2g_2d)
    long_name = "Orbit and coverage - first layer"
    units = "bit field"
```

```
byte num_observations(YDim:NPP_Grid_L2g_2d, XDim:NPP_Grid_L2g_2d)
    long_name = "Number of Observations"
    units = "none"
```

```
short I1_SurfRefl_c(Total Additional Observations) ;
    long_name = "Imagery (375m) Surface Reflectance Band 1 - additional layer,
compact"
    units = "percent reflectance"
    valid_range = 0, 65527
    Scale = 9.9658944e-05f
    Offset = 0.f
```

FILL VALUES:

```
NA_UINT16_FILL = 65535
MISS_UINT16_FILL = 65534
ONBOARD_PT_UINT16_FILL = 65533
ONGROUND_PT_UINT16_FILL = 65532
ERR_UINT16_FILL = 65531
ELLIPSOID_UINT16_FILL = 65530
VDNE_UINT16_FILL = 65529
SOUB_UINT16_FILL = 65528
```

```

short I2_SurfRefl_c(Total Additional Observations)
    long_name = "Imagery (375m) Surface Reflectance Band 2 - additional layer,
compact"
        units = "percent reflectance"
        valid_range = 0, 65527
        Scale = 9.9658944e-05f
        Offset = 0.f

    FILL VALUES:   NA_UINT16_FILL = 65535
                    MISS_UINT16_FILL = 65534
                    ONBOARD_PT_UINT16_FILL = 65533
                    ONGROUND_PT_UINT16_FILL = 65532
                    ERR_UINT16_FILL = 65531
                    ELLIPSOID_UINT16_FILL = 65530
                    VDNE_UINT16_FILL = 65529
                    SOUB_UINT16_FILL = 65528

short I3_SurfRefl_c(Total Additional Observations) ;
    long_name = "Imagery (375m) Surface Reflectance Band 3 - additional layer,
compact"
        units = "percent reflectance"
        valid_range = 0, 65527
        Scale = 9.9658944e-05f
        Offset = 0.f
    FILL VALUES:   NA_UINT16_FILL = 65535
                    MISS_UINT16_FILL = 65534
                    ONBOARD_PT_UINT16_FILL = 65533
                    ONGROUND_PT_UINT16_FILL = 65532
                    ERR_UINT16_FILL = 65531
                    ELLIPSOID_UINT16_FILL = 65530
                    VDNE_UINT16_FILL = 65529
                    SOUB_UINT16_FILL = 65528

byte orb_cov_c(Total Additional Observations)
    long_name = "Orbit and coverage - additional layers, compact"
    units = "bit field"

long nadd_obs_row(Data Rows)
    long_name = "Number of additional observations per row"
    units = "none"
    valid_range = 0, 2147483647
    FillValue = -1

```

## **NPP\_DSRFLD\_L2GD PRODUCT FILE SPECIFICATION**

Dimensions:

```
XDim:NPP_Grid_1km_2D  
XDim:NPP_Grid_1km_2D  
YDim:NPP_Grid_500m_2D  
XDim:NPP_Grid_500m_2D  
Total_Additional_Observations_1km  
YDim_1km  
Total_Additional_Observations_500m  
YDim_500m
```

Variables:

```
byte num_observations_1km(YDim:NPP_Grid_1km_2D, XDim:NPP_Grid_1km_2D)  
    long_name = "Number of Observations"  
    units = "none"
```

```
short SensorZenith_1(YDim:NPP_Grid_1km_2D, XDim:NPP_Grid_1km_2D)  
    long_name = "Sensor zenith - first layer"  
    units = "degree"  
    valid_range = 0, 18000  
    FillValue = -32767
```

```
short SensorAzimuth_1(YDim:NPP_Grid_1km_2D, XDim:NPP_Grid_1km_2D)  
    long_name = "Sensor azimuth - first layer"  
    units = "degree"  
    valid_range = -18000, 18000  
    FillValue = -32767
```

```
short SolarZenith_1(YDim:NPP_Grid_1km_2D, XDim:NPP_Grid_1km_2D)
    long_name = "Solar zenith - first layer"
    units = "degree"
    valid_range = 0, 18000
    FillValue = -32767

short SolarAzimuth_1(YDim:NPP_Grid_1km_2D, XDim:NPP_Grid_1km_2D)
    long_name = "Solar azimuth - first layer"
    units = "degree"
    valid_range = -18000, 18000
    FillValue = -32767

byte orbit_pnt_1(YDim:NPP_Grid_1km_2D, XDim:NPP_Grid_1km_2D)
    long_name = "Orbit pointer - first layer"
    units = "none"

byte obscov_1km_1(YDim:NPP_Grid_1km_2D, XDim:NPP_Grid_1km_2D)
    long_name = "Observation coverage - first layer"
    units = "percent"

short SurfReflect_Mod_b01_1(YDim:NPP_Grid_1km_2D, XDim:NPP_Grid_1km_2D)
    long_name = "Moderate (750m) Surface Reflectance Band 1 - first layer"
    units = "percent reflectance"
    valid_range = -100, 16000
    Offset = 0.
    Scale = 9.999997e-05

short SurfReflect_Mod_b02_1(YDim:NPP_Grid_1km_2D, XDim:NPP_Grid_1km_2D)
    long_name = "Moderate (750m) Surface Reflectance Band 2 - first layer"
    units = "percent reflectance"
    valid_range = -100, 16000
    Offset = 0.
    Scale = 9.999997e-05

short SurfReflect_Mod_b03_1(YDim:NPP_Grid_1km_2D, XDim:NPP_Grid_1km_2D)
```

long\_name = "Moderate (750m) Surface Reflectance Band 3 - first layer"  
units = "percent reflectance"

valid\_range = -100, 16000

Offset = 0.  
Scale = 9.9999997e-05

short SurfReflect\_Mod\_b04\_1(YDim:NPP\_Grid\_1km\_2D, XDim:NPP\_Grid\_1km\_2D)

long\_name = "Moderate (750m) Surface Reflectance Band 4 - first layer"  
units = "percent reflectance"  
valid\_range = -100, 16000  
Offset = 0.  
Scale = 9.9999997e-05

short SurfReflect\_Mod\_b05\_1(YDim:NPP\_Grid\_1km\_2D, XDim:NPP\_Grid\_1km\_2D)

long\_name = "Moderate (750m) Surface Reflectance Band 5 - first layer"  
units = "percent reflectance"  
valid\_range = -100, 16000  
Offset = 0.  
Scale = 9.9999997e-05

short SurfReflect\_Mod\_b07\_1(YDim:NPP\_Grid\_1km\_2D, XDim:NPP\_Grid\_1km\_2D)

long\_name = "Moderate (750m) Surface Reflectance Band 7 - first layer"  
units = "percent reflectance"  
valid\_range = -100, 16000  
Offset = 0.  
Scale = 9.9999997e-05

short SurfReflect\_Mod\_b08\_1(YDim:NPP\_Grid\_1km\_2D, XDim:NPP\_Grid\_1km\_2D)

```

    long_name = "Moderate (750m) Surface Reflectance Band 8 - first layer"
        units = "percent reflectance"
        valid_range = -100, 16000

    Offset = 0.

    Scale = 9.999997e-05

short SurfReflect_Mod_b10_1(YDim:NPP_Grid_1km_2D, XDim:NPP_Grid_1km_2D)

    long_name = "Moderate (750m) Surface Reflectance Band 10 - first layer"
        units = "percent reflectance"
        valid_range = -100, 16000

    SurfReflect_Mod_b10_1:Offset = 0.
    SurfReflect_Mod_b10_1:Scale = 9.999997e-05

short SurfReflect_Mod_b11_1(YDim:NPP_Grid_1km_2D, XDim:NPP_Grid_1km_2D)

    long_name = "Moderate (750m) Surface Reflectance Band 11 - first layer"
        units = "percent reflectance"
        valid_range = -100, 16000
    Offset = 0.

    Scale = 9.999997e-05

byte Land_Quality_Flags_b01_1(YDim:NPP_Grid_1km_2D,
                               XDim:NPP_Grid_1km_2D
)
    long_name = "Moderate (750m) Land Quality Flags Byte 1 - first layer"
        units = "bit field"

byte Land_Quality_Flags_b02_1(YDim:NPP_Grid_1km_2D,
                               XDim:NPP_Grid_1km_2D)
    long_name = "Moderate (750m) Land Quality Flags Byte 2 - first layer"
        units = "bit field"

byte Land_Quality_Flags_b03_1(YDim:NPP_Grid_1km_2D,

```

```

        XDim:NPP_Grid_1km_2D
)
long_name = "Moderate (750m) Land Quali
ty Flags Byte 3 - first layer"
units = "bit field"

byte Land_Quality_Flags_b04_1(YDim:NPP_Grid_1km_2D,
                               XDim:NPP_Grid_1km_2D
)
long_name = "Moderate (750m) Land Quali
ty Flags Byte 4 - first layer"
units = "bit field"

byte Land_Quality_Flags_b05_1(YDim:NPP_Grid_1km_2D,
                               XDim:NPP_Grid_1km_2D
)
long_name = "Moderate (750m) Land Quali
ty Flags Byte 5 - first layer"
Land_Quality_Flags_b05_1:units = "bit field"

byte Land_Quality_Flags_b06_1(YDim:NPP_Grid_1km_2D,
                               XDim:NPP_Grid_1km_2D
)
long_name = "Moderate (750m) Land Quali
ty Flags Byte 6 - first layer"
units = "bit field"

```

\*\*\*\*\* NOTE: Land\_Quality\_Flags\_b07 byte is only included in AS3002/ LandPEATE Adjusted data, and is not present in the AS3001/ LPEATE data. \*\*\*\*\*

```

byte Land_Quality_Flags_b07_1(YDim:NPP_Grid_1km_2D,
                               XDim:NPP_Grid_1km_2D
)
long_name = "Moderate (750m) Land Quali
ty Flags Byte 7 - first layer"
units = "bit field"

byte num_observations_500m(YDim:NPP_Grid_500m_2D,XDim:NPP_Grid_500m_2D)

long_name = "Number of Observations"
units = "none"

short I1_SurfRefl_1(YDim:NPP_Grid_500m_2D, XDim:NPP_Grid_500m_2D)

```

```
    long_name = "Imagery (375m) Surface Reflectance Ba  
nd 1 - first layer"  
  
        units = "percent reflectance"  
        valid_range = -100, 16000  
  
        I1_SurfRefl_1:Offset = 0.  
        I1_SurfRefl_1:Scale = 9.9999997e-05  
  
short I2_SurfRefl_1(YDim:NPP_Grid_500m_2D, XDim:NPP_Grid_500m_2D)  
  
    long_name = "Imagery (375m) Surface Reflectance Ba  
nd 2 - first layer"  
        units = "percent reflectance"  
  
        valid_range = -100, 16000  
        Offset = 0.  
        Scale = 9.9999997e-05  
  
short I3_SurfRefl_1(YDim:NPP_Grid_500m_2D, XDim:NPP_Grid_500m_2D)  
    long_name = "Imagery (375m) Surface Reflectance Ba  
nd 3 - first layer"  
  
        units = "percent reflectance"  
        valid_range = -100, 16000  
        Offset = 0.  
        Scale = 9.9999997e-05  
  
byte obscov_500m_1(YDim:NPP_Grid_500m_2D, XDim:NPP_Grid_500m_2D)  
    long_name = "Observation coverage - first layer"  
    units = "percent"  
  
byte iobs_res_1(YDim:NPP_Grid_500m_2D, XDim:NPP_Grid_500m_2D)  
    long_name = "observation number in coarser grid - fir  
st layer"  
    units = "none"  
  
short SensorZenith_c(Total_Additional_Observations_1km)  
    long_name = "Sensor zenith - additional layers, c  
ompact"  
    units = "degree"  
    valid_range = 0, 18000  
  
short SensorAzimuth_c(Total_Additional_Observations_1km)  
    long_name = "Sensor azimuth - additional layers,"
```

```

compact"
    units = "degree"
    valid_range = -18000, 18000

short SolarZenith_c(Total_Additional_Observations_1km)
    long_name = "Solar zenith - additional layers, compact"
pact"
    units = "degree"
    valid_range = 0, 18000

short SolarAzimuth_c(Total_Additional_Observations_1km)
    long_name = "Solar azimuth - additional layers, compact"
ompact"
    units = "degree"
    valid_range = -18000, 18000

byte orbit_pnt_c(Total_Additional_Observations_1km) ;
    long_name = "Orbit pointer - additional layers, compact"
act"
    units = "none"

byte obscov_1km_c(Total_Additional_Observations_1km) ;
    long_name = "Observation coverage - additional layers, compact"
    obscov_1km_c:units = "percent"

short SurfReflect_Mod_b01_c(Total_Additional_Observations_1km)
    long_name = "Moderate (750m) Surface Reflectance Band 1 - additional layers, compact"
    units = "percent reflectance"
    valid_range = -100, 16000
    Offset = 0.
    Scale = 9.999997e-05f ;

short SurfReflect_Mod_b02_c(Total_Additional_Observations_1km)
    long_name = "Moderate (750m) Surface Reflectance Band 2 - additional layers, compact"
    units = "percent reflectance"
    valid_range = -100, 16000

```

Offset = 0.  
Scale = 9.999997e-05

short SurfReflect\_Mod\_b03\_c(Total\_Additional\_Observations\_1km)  
  long\_name = "Moderate (750m) Surface Reflectance Band 3 - additional layers, compact"  
  units = "percent reflectance"  
  valid\_range = -100, 16000

Offset = 0.  
Scale = 9.999997e-05

short SurfReflect\_Mod\_b04\_c(Total\_Additional\_Observations\_1km)  
  long\_name = "Moderate (750m) Surface Reflectance Band 4 - additional layers, compact"  
  units = "percent reflectance"  
  valid\_range = -100, 16000  
Offset = 0.  
Scale = 9.999997e-05

short SurfReflect\_Mod\_b05\_c(Total\_Additional\_Observations\_1km)  
  long\_name = "Moderate (750m) Surface Reflectance Band 5 - additional layers, compact"  
  units = "percent reflectance"  
  valid\_range = -100, 16000  
Offset = 0.  
Scale = 9.999997e-05

short SurfReflect\_Mod\_b07\_c(Total\_Additional\_Observations\_1km)  
  long\_name = "Moderate (750m) Surface Reflectance Band 7 - additional layers, compact"  
  units = "percent reflectance"  
  valid\_range = -100, 16000  
Offset = 0.  
Scale = 9.999997e-05

short SurfReflect\_Mod\_b08\_c(Total\_Additional\_Observations\_1km)  
  long\_name = "Moderate (750m) Surface Reflectance Band 8 - additional layers, compact"  
  units = "percent reflectance"  
  valid\_range = -100, 16000  
Offset = 0.

Scale = 9.999997e-05

short SurfReflect\_Mod\_b10\_c(Total\_Additional\_Observations\_1km) ;

    long\_name = "Moderate (750m) Surface Reflectance Band 10 - additional layers, compact"

    units = "percent reflectance"

    valid\_range = -100, 16000

    Offset = 0.

    Scale = 9.999997e-05

short SurfReflect\_Mod\_b11\_c(Total\_Additional\_Observations\_1km)

    long\_name = "Moderate (750m) Surface Reflectance Band 11 - additional layers, compact"

    units = "percent reflectance"

    valid\_range = -100, 16000

    Offset = 0.

    Scale = 9.999997e-05

byte Land\_Quality\_Flags\_b01\_c(Total\_Additional\_Observations\_1km)

    long\_name = "Moderate (750m) Land Quality Flags Byte 1 - additional layers, compact" ;

    units = "bit field" ;

byte Land\_Quality\_Flags\_b02\_c(Total\_Additional\_Observations\_1km)

    long\_name = "Moderate (750m) Land Quality Flags Byte 2 - additional layers, compact"

    units = "bit field"

byte Land\_Quality\_Flags\_b03\_c(Total\_Additional\_Observations\_1km)

    long\_name = "Moderate (750m) Land Quality Flags Byte 3 - additional layers, compact"

    units = "bit field"

byte Land\_Quality\_Flags\_b04\_c(Total\_Additional\_Observations\_1km)

    long\_name = "Moderate (750m) Land Quality Flags Byte 4 - additional layers, compact"

    units = "bit field"

byte Land\_Quality\_Flags\_b05\_c(Total\_Additional\_Observations\_1km)

    long\_name = "Moderate (750m) Land Quality Flags Byte 5 - additional layers, compact"

    units = "bit field"

ty Flags Byte 5 - additional layers, compact"

Land\_Quality\_Flags\_b05\_c:units = "bit field"

byte Land\_Quality\_Flags\_b06\_c(Total\_Additional\_Observations\_1km) ;

long\_name = "Moderate (750m) Land Quali  
ty Flags Byte 6 - additional layers, compact" ;

units = "bit field"

\*\*\*\*\* NOTE: Land\_Quality\_Flags\_b07 byte is only included in AS3002/ LandPEATE  
Adjusted data, and is not present in the AS3001/ LPEATE data. \*\*\*\*\*

byte Land\_Quality\_Flags\_b07\_c(Total\_Additional\_Observations\_1km)  
long\_name = "Moderate (750m) Land Quali  
ty Flags Byte 7 - additional layers, compact"  
units = "bit field"

long nadd\_obs\_row\_1km(YDim\_1km)  
long\_name = "Number of additional observations  
per row"

units = "none"  
valid\_range = 0, 2147483647

short I1\_SurfRefl\_c(Total\_Additional\_Observations\_500m)  
long\_name = "Imagery (375m) Surface Reflectance Ba  
nd 1 - additional layers, compact"  
units = "percent reflectance"  
valid\_range = -100, 16000  
Offset = 0.  
Scale = 9.999997e-05

short I2\_SurfRefl\_c(Total\_Additional\_Observations\_500m)  
long\_name = "Imagery (375m) Surface Reflectance Ba  
nd 2 - additional layers, compact"  
units = "percent reflectance"  
valid\_range = -100, 16000  
Offset = 0.

```
Scale = 9.999997e-05

short I3_SurfRefl_c(Total_Additional_Observations_500m)
    long_name = "Imagery (375m) Surface Reflectance Ba
nd 3 - additional layers, compact"
    units = "percent reflectance"
    valid_range = -100, 16000
    Offset = 0.
    Scale = 9.999997e-05

byte obscov_500m_c(Total_Additional_Observations_500m)
    long_name = "Observation coverage - additional lay
ers, compact"
    units = "percent" ;

byte iobs_res_c(Total_Additional_Observations_500m)
    long_name = "observation number in coarser grid - add
itional layers, compact"
    iobs_res_c:units = "none"

long nadd_obs_row_500m(YDim_500m)
    long_name = "Number of additional observations
per row"
    units = "none"
    valid_range = 0, 2147483647
    FillValue = -1
```



Table 4: Surface reflectance quality flag scheme

Note that bit 7 is present in LPA/ AS3002 product but not LPEATE/AS3001 product.

Byte	Bits	Quality flag	Values
1	0-1	Cloud mask quality	00 Poor 01 Low  10 Medium 11 High
	2-3	Cloud detection & confidence	00 Confident clear  01 Probably clear  10 Probably cloudy  11 Confident cloudy
	4	Day/night	0 Day  1 Night
	5	Low sun mask	0 High  1 Low
	6-7	Sun glint	00 None  01 Geometry based  10 Wind speed based  11 Geometry & wind speed based
2	0-2	Land/water background	000 Land & desert  001 Land no desert  010 Inland water  011 Sea water  101 Coastal

	3	Shadow mask	0 No cloud shadow 1 Shadow
	4	Heavy aerosol mask	0 No heavy aerosol 1 Heavy aerosol
	5	Snow/ice	0 No snow/ice 1 Snow or ice
	6	Thin cirrus reflective	0 No cloud 1 Cloud
	7	Thin cirrus emissive	0 No cloud 1 Cloud
3	0	Bad M1 SDR data	0 No 1 Yes
	1	Bad M2 SDR data	0 No 1 Yes
	2	Bad M3 SDR data	0 No 1 Yes
	3	Bad M4 SDR data	0 No 1 Yes
	4	Bad M5 SDR data	0 No 1 Yes
	5	Bad M7 SDR data	0 No 1 Yes
	6	Bad M8 SDR data	0 No 1 Yes
	7	Bad M10 SDR data	0 No 1 Yes
4	0	Bad M11 SDR data	0 No

			1 Yes
1	Bad I1 SDR data	0 No 1 Yes	
2	Bad I2 SDR data	0 No 1 Yes	
3	Bad I3 SDR data	0 No 1 Yes	
4	Overall quality of AOT	0 Good 1 Bad	
5	Missing AOT input data;	0 No 1 Yes	
6	Invalid land AM input data	0 Valid 1 Invalid AMI over land or over ocean	
7	Missing PW input data	0 No 1 Yes	
5	0	Missing OZ input data	0 No 1 Yes
	1	Missing SP input data	0 No 1 Yes
	2	Overall quality M1 SR data	0 Good 1 Bad
	3	Overall quality M2 SR data	0 Good 1 Bad
	4	Overall quality M3 SR data	0 Good 1 Bad
	5	Overall quality M4 SR data	0 Good 1 Bad

	6	Overall quality M5 SR data	0 Good 1 Bad
5	7	Overall quality M7 SR data	0 Good 1 Bad
6	0	Overall quality M8 SR data	0 Good 1 Bad
	1	Overall quality M10 SR data;	0 Good 1 Bad
	2	Overall quality M11 SR data	0 Good 1 Bad
	3	Overall quality I1 SR data	0 Good 1 Bad
	4	Overall quality I2 SR data	0 Good 1 Bad
	5	Overall quality I3 SR data	0 Good 1 Bad
	6-7	Unused	
7	0	Snow present	0 No 1 Yes
	1	Adjacent to cloud	0 No 1 Yes
	2-3	Aerosol quantity	00 Climatology 01 Low 10 Average 11 High
	4	Thin cirrus flag	0 No 1 Yes
	5-7	Unused	